

UNCLASSIFIED



Design of Military Vehicles with the Soldier in Mind: *Functionality and Safety Combined*

UNCLASSIFIED: Dist A. Approved for public release.



TECHNOLOGY DRIVEN. WARFIGHTER FOCUSED.

Regina M. Rogers
Occupant Centric Survivability Project Lead
Ground System Survivability

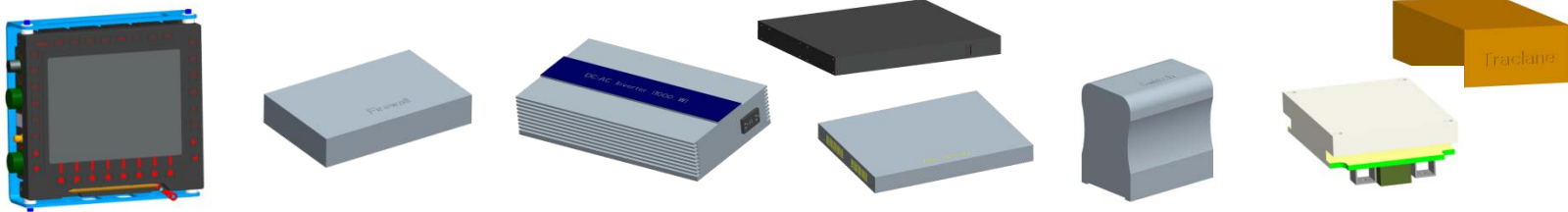
UNCLASSIFIED

Report Documentation Page			Form Approved OMB No. 0704-0188		
Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.					
1. REPORT DATE 31 MAR 2011		2. REPORT TYPE N/A		3. DATES COVERED -	
4. TITLE AND SUBTITLE Design of Military Vehicles with the Soldier in Mind: Functionality and Safety Combined			5a. CONTRACT NUMBER		
			5b. GRANT NUMBER		
			5c. PROGRAM ELEMENT NUMBER		
6. AUTHOR(S) Regina M. Rogers			5d. PROJECT NUMBER		
			5e. TASK NUMBER		
			5f. WORK UNIT NUMBER		
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) US Army RDECOM-TARDEC 6501 E 11 Mile Rd Warren, MI 48397-5000, USA			8. PERFORMING ORGANIZATION REPORT NUMBER 21658		
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) US Army RDECOM-TARDEC 6501 E 11 Mile Rd Warren, MI 48397-5000, USA			10. SPONSOR/MONITOR'S ACRONYM(S) TACOM/TARDEC/RDECOM		
			11. SPONSOR/MONITOR'S REPORT NUMBER(S) 21658		
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release, distribution unlimited					
13. SUPPLEMENTARY NOTES The original document contains color images.					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT UU	18. NUMBER OF PAGES 11	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			

- Weapons System (control equipment)

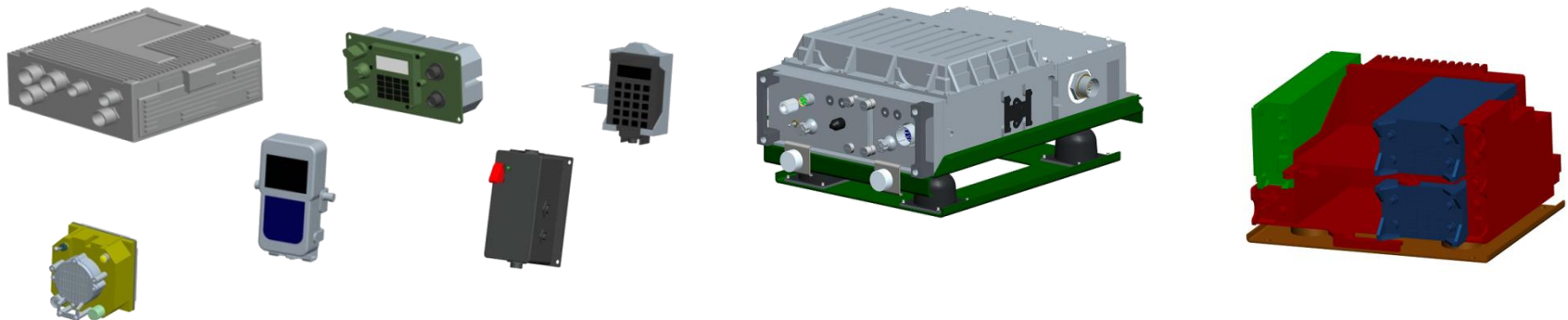


- Power/Data Architecture



- Situational Awareness

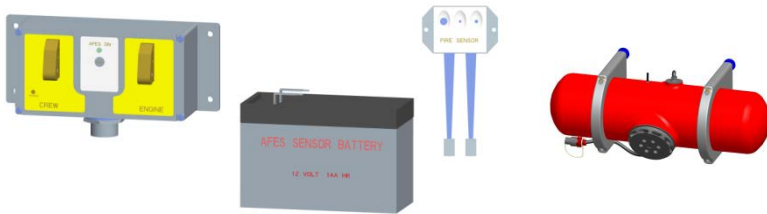
- Communications Equipment



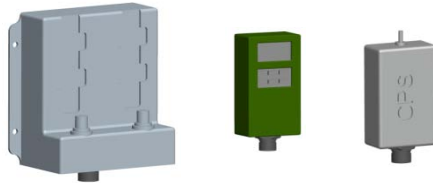
- Day/Night Vision Equipment



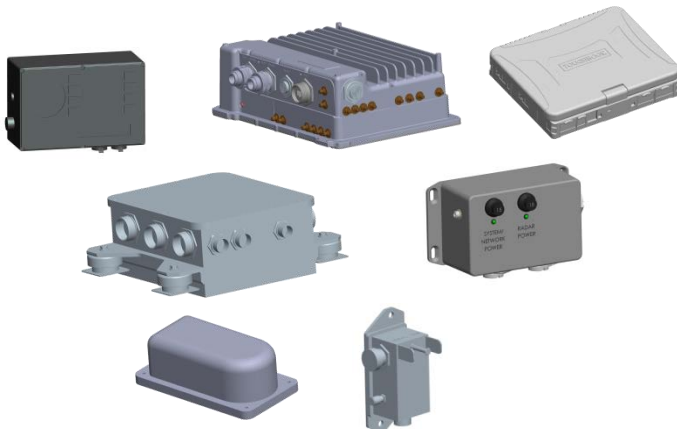
- Fire Suppression System



- CBRN Protection System



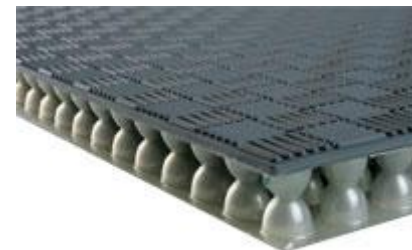
- Active Protection Systems (control)



- Seats / Restraints



- Energy Absorption Materials



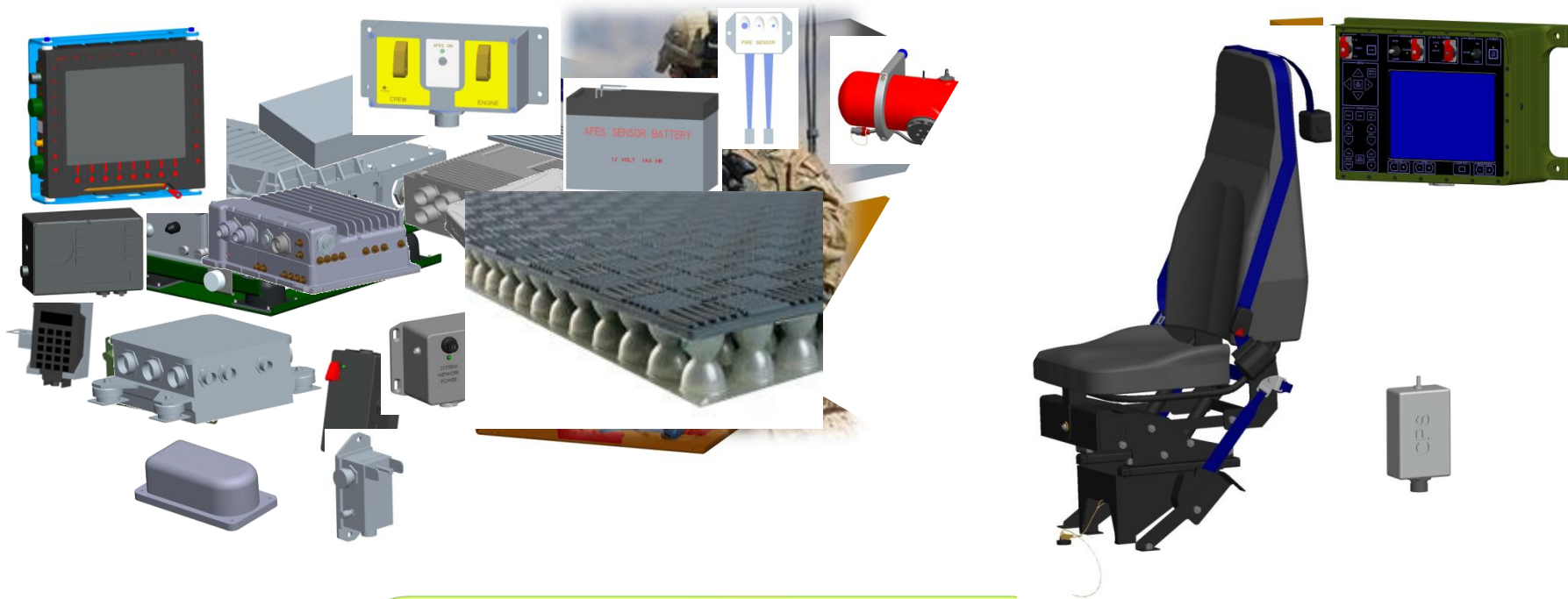


Current Military
Vehicle Design
Approach

What does a military vehicle look like using the current approach for vehicle design?

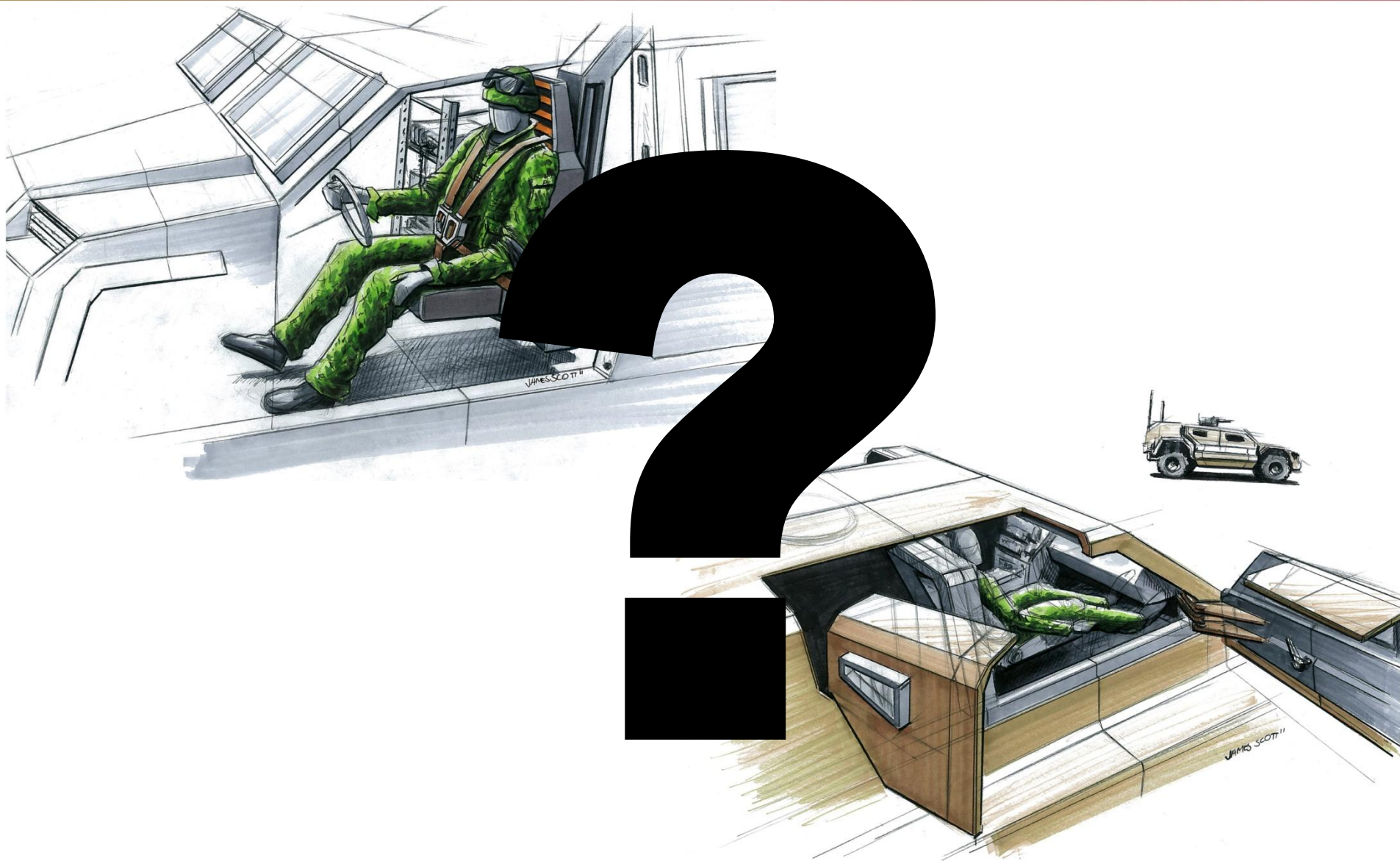


TECHNOLOGY DRIVEN. WARFIGHTER FOCUSED.



Future Military
Vehicle Design
Approach

What does a military vehicle look like using the
future approach for vehicle design?



TECHNOLOGY DRIVEN. **WARFIGHTER FOCUSED.**

CAPABILITY GAP

CURRENT CAPABILITY

Blast Event

Soldier

OCS Toolbox

Army Ground Vehicle Design

Production & Deployment

Continuous Fleet Performance & Theatre Data Feedback Loop

Understand the blast event:

- Theatre Data
- Vehicle & Injury Battlefield
- Vehicle Forensic Teams & Attack Scene Investigation
- JTAPIC

Understand blast injury:

- Injury Mechanism
- Human/Soldier Response and Tolerance
- Live Human Anthropometry and Response
- Cadaver Testing

Translate event into quantifiable metrics:

- Injury Assessment Reference Values
- Vehicle Response – Force, Stress, and Displacement

Understand the Soldier and their Mission:

- Soldier Population
- PPE and Gear
- Human Factors
- Needs /Requirements (TRADOC)

OCS Toolbox:

- Design Guidelines
- Component Specifications
- Sub-System/System Specifications
- Test Procedures
- MIL-STANDARDS

Occupant Protection Systems Integration Laboratory (OP SIL):

- Drop Tower
- Vertical Impact Test Simulator (VITS)
- Head Impact Protection (HIP)
- Linear Impact Sled (LIS)
- Multi-Axis Blast Simulator (MABS)
- Grayling
- Test Dummies
- Instrument Calibration
- WIAMan

VEHICLE M&S and LFT&E

COMPONENT M&S and T&E

MODELING & SIMULATION
TEST & EVALUATION

SYSTEM M&S and T&E

SUB-SYSTEM M&S and T&E

Soldier Domain:

- Advanced PPE and Gear

Exterior Technologies:

- Underbody Kits
- Panels, inserts, advanced materials
- Cargo/gear retention

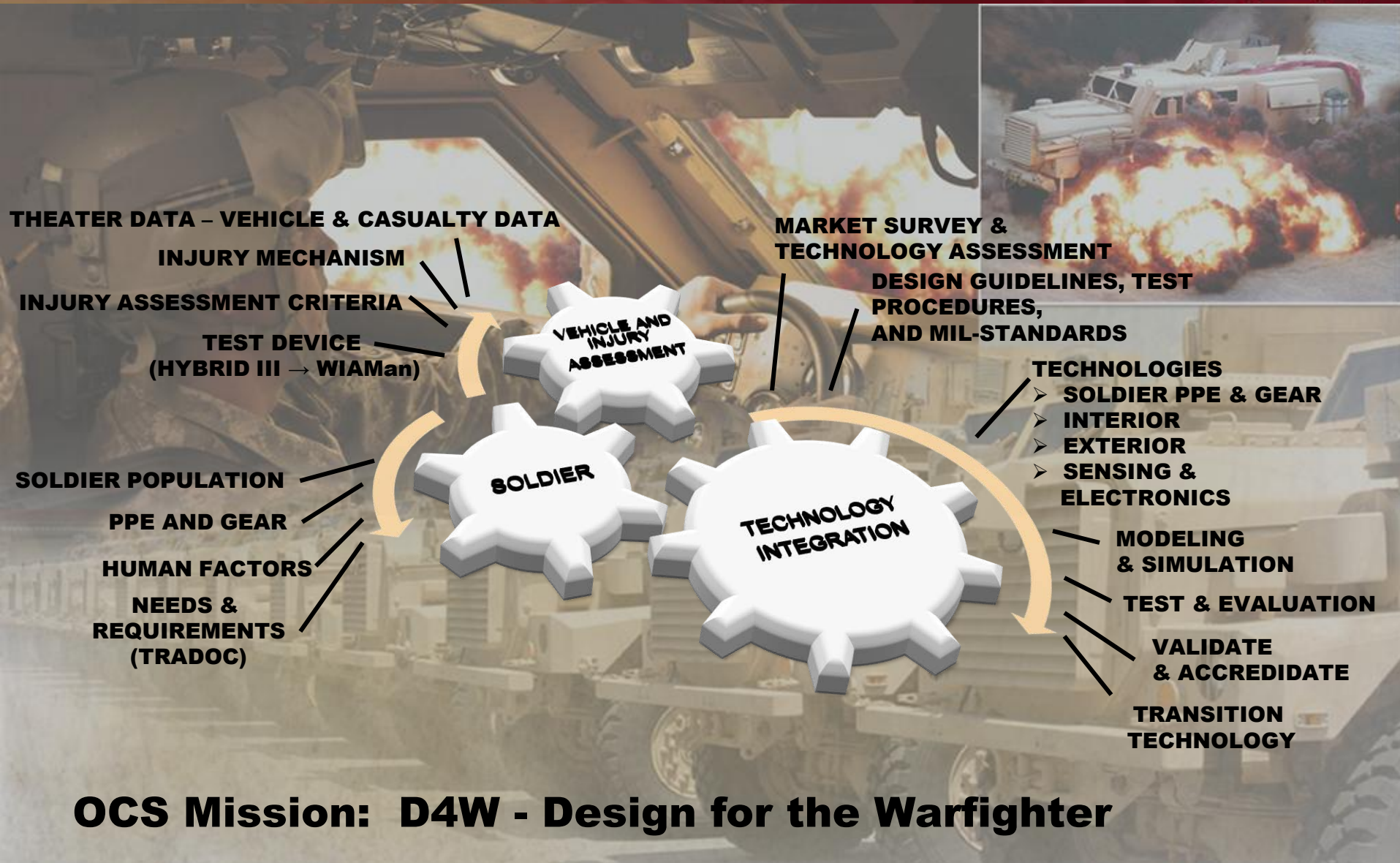
Interior Technologies:

- Seats
- Ease-of-use Belts
- Energy Absorbing Materials
- Ingress/Egress

Sensing and Electronics Technologies:

- Black Box
- Internal Sensors
- Diagnostic Modules







THANK YOU!

Regina M. Rogers

Occupant Centric Survivability (OCS)

Project Lead

Mobile: 586.219.8345

Office: 586.282.5121

Email: Regina.Rogers@us.army.mil

Christine M. Wodzinski

Occupant Centric Survivability (OCS)

Project Deputy

Mobile: 586.202.9045

Office: 586.282.0860

Email: Christine.Wodzinski@us.army.mil